

ON SOME CENTIPEDS AND MILLIPEDS FROM
UTAH AND ARIZONA

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These notes are based chiefly upon material collected in the course of a field trip from the Department of Zoölogy of the University of Utah to the western side of the Henry Mountains during September, 1929. Collections were made *en route* at several points, such as at Fish Lake, in Sevier County, and at the Neff ranch in Horse Valley, Wayne County. A few forms from other localities, such as Flagstaff and the Kaibab Forest, Arizona, and St. George, Utah, are also included.

CHILOPODA

LAMYCTES FULVICORNIS Meinert

Utah: Capitol Wash, Wayne County. One specimen 9 mm. long was taken by W. Gertsch on September 12.

The specimen lacks the anal legs, but agrees so closely in other features that little doubt can exist as to its identity.

OABIUS PIUTUS Chamberlin

Utah: Horse Valley, Wayne County. One male.

This species was taken originally at Parowan in Iron County.

POKABIUS UTAHENSIS (Chamberlin)

Utah: Fish Lake, Sevier County (September 4 and 5); Butterfield Canyon, Salt Lake County (May, 1929).

This species is abundant at both these places under fallen leaves, etc., along the stream courses. It is one of the commonest chilopods in the state.

Pokabius pedus Chamberlin, new species

A species of *Pokabius* sens. str. which resembles *P. utahensis* in having only the last pair of coxæ laterally armed. It is a larger form most readily distinguished in the male by the form of the anal legs. In these the fourth joint is widely longitudinally furrowed above with the mesal side of this furrow limited by a ridge which at its proximal end is produced dorsomesad into a process much as in *P. gilæ*, but the process is longer and distally narrower. Unlike *P. utahensis* and *P. gilæ* the third joint is not produced at its distal end opposite to or continuously with the process of the fourth joint. Anal legs with dorsal spines 1, 0, 3, 1, 0; ventral spines,

0, 1, 3, 2, 0; coxa also laterally armed. Penult legs with dorsal spines 1, 0, 2, 1, 1; ventral spines, 0, 1, 3, 3, 2, with three claws. Coxal pores, 2, 2, 2, 2. Ocelli few, in two series; e. g., 1 + 4, 3, the single ocellus close to the others.

Color of dorsum light brown, the last tergite and the frontal region of head lighter; legs and antennæ yellow.

Length, 11.5 mm. (male holotype).

Utah: St. George, Washington County. One male taken April 3, 1929, by Lowell Woodbury.

LOPHOBIUS FRANCISCÆ Chamberlin

Utah: Fish Lake and Burrville, Sevier County (September 5 and 6); Panguich, Garfield County (A. M. Myers collection); Henry Mountains, Wayne and Garfield counties.

This species seems to be abundant at all these places. In the specimens from Fish Lake it was noted that the ventral spines of the anal legs are either 0, 1, 3, 2, 1 or 0, 1, 3, 2, 0, the latter formula being more frequent than in the type specimens from Cedar City. It is plentiful in the Henry Mountains, above King's ranch, at the level of the yellow pines (e. g., at Pine Springs).

LOPHOBIUS COLLIUM Chamberlin

Utah: Fish Lake (September 5), and Fruita (September 14), Wayne County; Horse Valley and near Loa (September 6), Wayne County; Henry Mountains, especially at level of the quaking aspens (September 10 and 11), Garfield County. Abundant at all these places.

This species is common from Salt Lake County southward as far as Bluff, San Juan County, especially under stones over the open foothills and other nonwooded places.

ANOBIUS CENTURIO (Chamberlin)

Utah: Henry Mountains, at King's ranch, base of mountains. Common. Previously reported from San Juan County, Utah, and New Mexico (type locality).

BOTHROPOLYS PERMUNDUS Chamberlin

Utah: Butterfield Canyon, Salt Lake County. Found common in May, 1929.

Common in canyons of the Wasatch Mountains, especially in the northern part of the state. It seems to be replaced

farther south, as in Wayne County, by the next species, *Archethopolys parowanus*.

ARCHETHOPOLYS PAROWANUS Chamberlin

Utah: Fish Lake, Sevier County; Henry Mountains, at several localities (e. g., Pine Springs, Willow Springs, and other points above King's ranch).

Apparently common in favorable places in Wayne and Garfield counties, where it is undoubtedly the prevalent large lithobioid.

Archethopolys kaibabus Chamberlin, new species

A species closely related to *A. gosobius* occurring in San Juan County, but much smaller in size and typically with only a single prosternal tooth ectad of the diastemal seta instead of three or four, the dental formula in the holotype being 1-6 + 6-1. In thus having but a single tooth ectad of the diastema the species agrees with *A. parowanus*, but the latter species has the claw of the genital forceps of the female entire, whereas in the present species the claw is tripartite, with the basal spines 3 + 3. Last two pairs of coxæ armed ventrally and laterally. Ventral spines of anal legs, 1, 1, 3, 3, 2, the claw armed with two straight spines at base. Ocelli in a narrowly elongate patch, arranged in three series; thus, 1 + 6, 5, 2. Antennæ consisting of twenty articles, moderate in length, reaching upon the sixth dorsal plate.

Length, 18 mm., or a little less.

Arizona: Kaibab Forest, not far from the Utah border. One female (holotype) and a male lacking anal legs, collected by Lowell Woodbury on July 7, 1929.

The species of this group (*Archethopolys*) now known from Utah and the adjacent parts of Arizona may be separated by means of the following key.

- a. Normally with two or more teeth ectad of diastemal bristle on the prosternal margin.
 - b. Ventral spines of anal legs, 1, 1, 3, 2, 1; ectal teeth of prosternum on each side, normally, two.....*A. bipunctatus* (Wood)
 - bb. Ventral spines of anal legs, 1, 1, 3, 2, 0; ectal teeth on each side of prosternum, normally, three or four.....*A. gosobius* Chamberlin
- aa. Normally with only one tooth ectad of diastemal bristle on each side of prosternum.
 - b. Claw of genital forceps of female entire, acute; length, 21 mm. and above.....*A. parowanus* Chamberlin
 - bb. Claw of genital forceps of female more blunt, tripartite; length, 18 mm.....*A. kaibabus*, new species

LINOTÆNIA CHIONOPHILA (Wood)

Mill Creek Canyon, Salt Lake County (August, 1929); Butterfield Canyon, Salt Lake County (May, 1929); Fruita, Wayne County; Henry Mountains, Garfield County (e. g., at Willow Springs and Pine Springs, September 10 and 11, 1929).

This species, common in Canada, Alaska, etc., is distributed throughout Utah in the mountains, especially at middle and upper elevations.

GEOPHILUS GLYPTUS Chamberlin

Utah: Butterfield Canyon, Oquirrh Mountains, Salt Lake County (May, 1929).

This species was described originally from the Wasatch Mountains, Salt Lake County, and is also known from the State of Washington.

Geophilus piedus Chamberlin, new species

A species resembling *G. rubens* Say in having the frontal plate discrete, the prebasal plate exposed, the last ventral plate very wide, with two pits on each anal coxa covered by the last ventral plate. It differs from that species, among other points, in having the spiracles, excepting the last few, elliptic in shape instead of circular, with the first two on each side much larger than the third, the second not being much smaller than the first; in having the ventral pores in a band along caudal border of plate strongly developed, this band extending forward angularly at middle line; and in having the number of pairs of legs much greater, seventy-nine in the holotype. Dorsum lacking the geminate dark band showing typically in *G. rubens*.

Length, 75 mm.

Utah: **St. George.** One male taken by Lowell Woodbury, April 3, 1929.

GEOPHILUS FRUITANUS Chamberlin

Utah: Horse Valley, Wayne County. One female.

Like the holotype, which was taken at Fruita, Wayne County, in May, 1928, the present specimen has fifty-seven pairs of legs.

GNATHOMERIUM XENOPORUS (Chamberlin)

Utah: Butterfield Canyon (May, 1929), and Mill Creek Canyon (August, 1929), Salt Lake County; Fish Lake and Burrville (September 4 and 6), Sevier County; Horse Valley (September), and Fruita, Wayne County; Panguich (A. M. Myers) and Henry Mountains (Willow Springs, Pine Springs

and at level of quaking aspens, September 10 and 11), Garfield County.

This species in Salt Lake County and other northern sections of the state on the average has fewer pairs of legs (forty-five to forty-nine) than those represented by the present collection from more southern localities. In the latter the pairs of legs range from forty-nine to fifty-three.

Navajona Chamberlin, new genus

Frontal suture absent. Prebasal plate covered. Dorsal plates bisulcate. Antennæ short and filiform. A single clypeal area present, this small and finely areolated. Labrum free, with the lateral pieces meeting at the middle line, fringed throughout with long spinescent processes. Outer branch of first maxillæ distinctly biarticulate, each bearing two membranous lappets of which the distal one, in the holotype, is the larger. Inner branch undivided, set off by a suture which may be in part indistinct. Coxæ completely fused. Coxæ of the second maxillæ weakly united at middle by a more membranous isthmus; pleurosternal sutures strongly developed; the pore opening mesad of anterior end of suture through edge of sclerite; palpus triarticulate, terminating in a simple claw, none of the joints with processes.

Prehensors large, exposed at sides and projecting beyond front margin of the head. Claw armed at base; femuroid armed distally and the intermediate joints armed with weaker teeth or bosses. Prosternum without chitinous lines; anterior margin unarmed. Ventral pores absent. Anterior spiracles elliptic. Last ventral plate wide. Coxopleuræ but little inflated. Pores small and few in number. Anal pores well developed. Anal legs clawless, consisting of only five joints distad of coxæ.

Genotype. *Navajona miuropus*, new species.

This genus differs from all other chilenophiloid genera in having only five articles in the anal legs distad of the coxæ. It may be placed with reference to the other known North American genera of the group by means of the following key.

Key to North American Genera of the Chilenophilidæ

- a. Anal legs with an additional article replacing the claw.
 - b. Coxæ of second maxillæ broadly and completely fused
.....*Telocricus* Chamberlin
 - bb. Coxæ of second maxillæ separated or at most weakly
united by a membranous isthmus.....*Watophilus* Chamberlin
- aa. Anal legs without such additional article, having only five or
six articles beyond coxopleuræ; either with or without
claws.

- b. Lateral pieces of labrum overlapping the median piece and meeting at middle line.
- c. Anal legs with six articles beyond coxopleuræ and bearing claws.
- d. No clypeal area present.....*Gnathomerium* Ribaut
- dd. A clypeal area present.....*Cryophilus* Chamberlin
- cc. Anal legs with only five articles beyond coxopleura, clawless.....*Navajona*, new genus
- bb. Lateral pieces of labrum not in contact at median line, more or less widely separated by middle piece.
- c. No ventral pores present.....*Taiyuna* Chamberlin
- cc. Ventral pores in four areas.....*Nesidiphilus* Chamberlin

***Navajona miuropus* Chamberlin new species**

Body yellowish. Cephalic plate longer than wide nearly in ratio 3:2, a little wider anteriorly than posteriorly; lateral margins at middle nearly straight, but the corners well rounded (see figure); anterior margin somewhat arcuate; caudal margin nearly straight or very slightly convex. Basal plate a little overlapped anteriorly by the cephalic, its exposed area wider than long in the ratio 2.25:1.

Claws of prehensors when closed attaining anterior end of first antennal article. Claw armed at base with a tooth of moderate size. Femuroid armed near distal end with a rounded, somewhat distally directed, tooth. The intermediate joints each with a small, rounded nodular tooth or boss. Anterior margin of prosternum unarmed, mesally emarginate. Prosternum nearly equal in length and breadth. Median length 1.7 times greater than length of femuroid on its ectal side. Paired sulci of tergites deeply impressed. Anterior ventral plates with a deeply impressed median longitudinal sulcus, this becoming shallower toward posterior region and finally disappearing. No ventral pores detected. Anterior spiracles vertically elliptic, the first abruptly much larger than the second; those of middle and posterior regions circular. First legs much smaller than the second. Last ventral plate broad, narrowed caudad (trapeziform); the caudal margin shallowly incurved mesally; sides convex, converging more strongly over posterior part of length than over anterior. Pores of coxæ simple, small, few in number, six or seven arranged in a circular line with mesal two or three covered by last ventral plate. Anal legs somewhat crassate, thickest near middle of length, the last article distally rounded, wholly lacking any trace of claw. Anal pores conspicuous. Pairs of legs in holotype, fifty-one. Length, 30 mm.

Arizona: Flagstaff. One male taken in May, 1929.

SCOLOPENDRA POLYMORPHA Wood

Utah: Fruita and Horse Valley, Wayne County; Henry Mountains, at and near King's ranch. Common.

This species is distributed throughout Utah as far north as Salt Lake County. The specimens from the northern part of

the state are smaller and less brightly colored than those from the south. The Wayne, Garfield County, specimens are large and have the tergites conspicuously banded across the posterior borders as in typical Arizona and California specimens.

DIPLOPODA

PARAJULUS TIGANUS Chamberlin

Utah: Mill Creek and Butterfield canyons, Salt Lake County (August and May, 1929); Fish Lake, Sevier County (September 4 and 6).

Undoubtedly the most abundant member of the genus in the state.

PARAJULUS PAIUTUS Chamberlin

Utah: Fish Lake, Sevier County; Weber Canyon, Summit County, where it occurs along with the commoner *P. tiganus*.

Previously known from Parowan and Cedar City, Iron County, and Zion National Park, Washington County.

PARAJULUS sp.

Utah: Henry Mountains, Garfield County.

Specimens of a species of *Parajulus* were collected in the Henry Mountains at Willow Springs and other points, but the vials containing them have been misplaced or lost. Only one specimen, a not fully mature male is available at this time.

Piedolus Chamberlin, new genus

Related to *Atopetholus* and allied spiroboloid genera of the southeastern United States. It is like *Atopetholus* in having the first three pairs of legs crassate in the male; but the claws are not disproportionately enlarged or hypertrophied, being obviously shorter than the last tarsal joint, the next three pairs of legs less crassate, and all others normal. Unlike *Atopetholus*, it has the coxæ of the third legs with processes much more developed than in the following legs, these processes being chitinous, smooth falcate or subuncate blades. Coxæ of fourth, fifth and sixth legs compressed in the caudo-cephalic direction, and projecting ventrad at ends but little. Collum with lateral ends acute, and with anterior margin incurved on each side opposite level of eye. Anal valves with mesal margins meeting in a groove, not compressed or elevated.

Telopodite of anterior gonopods exceeding the coxal plate, a little produced at mesodistal angle. Posterior gonopods with telopodite furcate or biramous, the branch carrying the duct slender, the other laminate.

Genotype. *Piedolus utus* Chamberlin.

***Piedolus utus* Chamberlin, new species**

Color in general deep brown or almost black, the segments lighter beneath; head and anal segments uniform in color except for a median pale line above clypeal incision; legs and antennæ concolorous with body.

Clypeal foveolæ 5 + 5. Median sulcus extending across vertex and down to level of antennæ where it is furcate, the divergent branches only obscurely impressed. Lower angle of collum on each side a little rounded; anterior border margined from the angle up to level opposite the eye.

Segments transversely constricted or furrowed in front of level of spiracles; smooth, scarcely at all sculptured, the surface caudad of constriction obscurely and very finely punctate. Anal valves inflated, not at all compressed, equaling the last dorsal plate. Last dorsal plate caudally widely rounded; transversely depressed near middle of length.

In the male the slender coxal processes of the third legs curve caudad to or just beyond the coxæ of the fifth legs. Gonopods as represented in the accompanying figure. Number of segments, 44. Length, about 30 mm.; diameter, 3 mm.

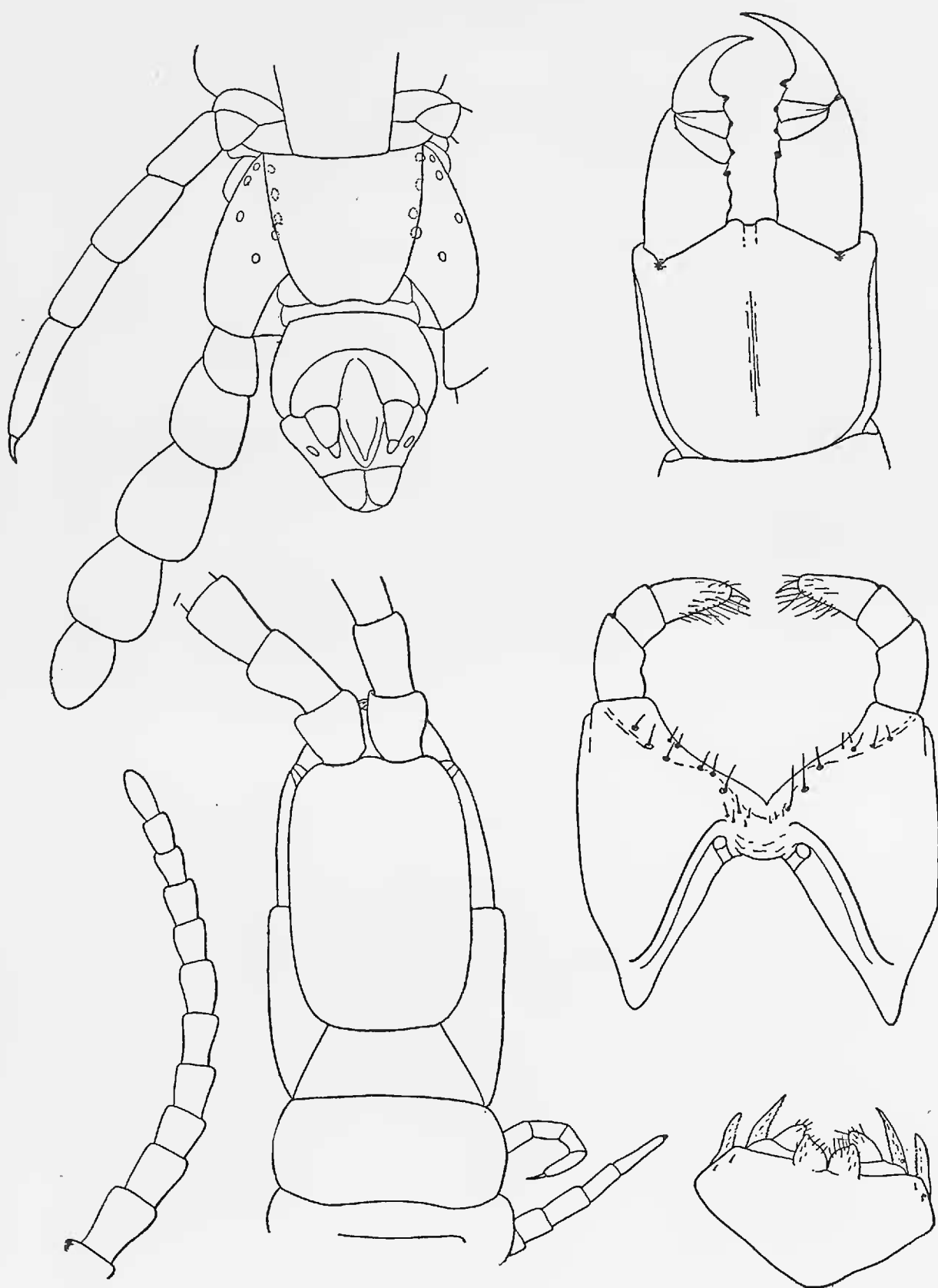
Utah: St. George. One male taken April 3, 1929, by Lowell Woodbury.

***Brachydesmus henriensis* Chamberlin, new species**

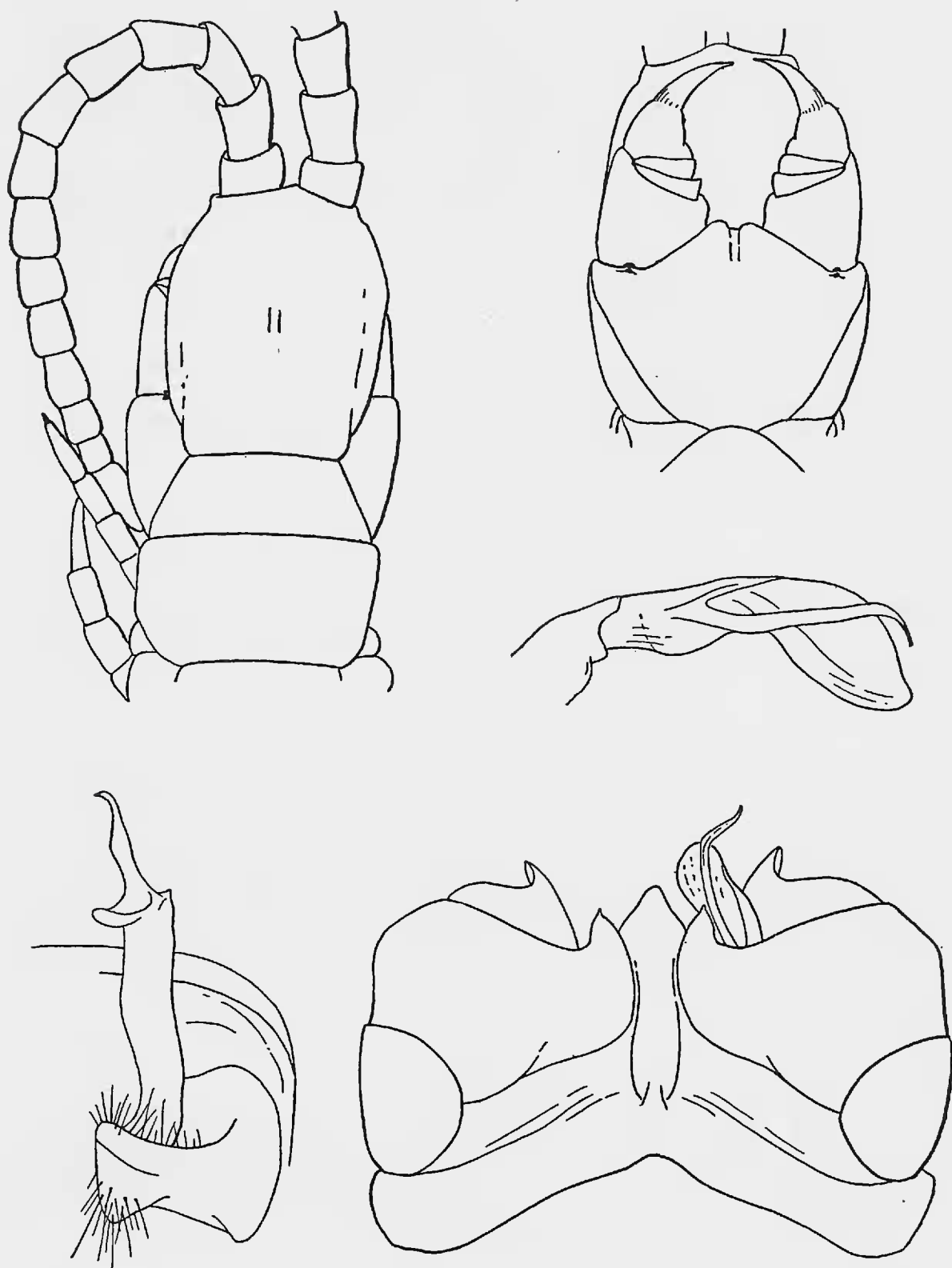
Typically the body is light brown above and over the sides; the venter, including basal joints of legs, lighter, yellowish or sometimes whitish. The head brown above, but in clypeal region and up to or a little above level of antennæ paler, yellowish. Legs light brown, the antennæ, except proximally, darker, the joints sometimes pale at distal ends.

Collum not quite as wide as head inclusive of cardines, and decidedly narrower than the second tergite; lateral and anterior margins together forming an even, subsemicircular curve, this margin with typically eighteen distinct, setigerous teeth.

In the other tergites the keels are nearly horizontal, the lateral ends of the most posterior ones a little upturned. Second tergite obviously wider than the head; keels bent forward; anterior margin of keel smooth; lateral margin with two large, setigerous teeth between a small one at anterior corner and a larger one at posterior corner; caudal margin of keel with two teeth. Keels of subsequent tergites more nearly transverse, those of middle and posterior regions entirely so; all with marginal teeth arranged as in the second. Anterior margins of keels from fourth to seventh with one or two minute serrations proximad of corner tooth. Keels of seventeenth and eighteenth tergites shortened and with caudal angles produced



Navajona miuropus, new species. Top figures: left, caudal end, ventral view (x 62); right, prehensors, ventral view (x 27). Middle figure: second maxillæ (x 62). Bottom figures: right, second maxillæ (x 62); middle, anterior end, dorsal view (x 27); left, last eleven articles of left antenna (x 27).



Top figures: Dorsal view of anterior end and ventral view of prehensors of *Geophilus fruitanus* Chamberlin (x 39). Middle figure: Telopodite of left posterior gonopod (x 40) of *Piedolus utus*, new species. Right figure at bottom, gonopods, anterior view (x 32). Left figure at bottom, left gonopod of male, subventral view, of *Brachydesmus henriensis*, new species (x 40).

moderately caudad of caudal margin of tergite. Tubercles of the three transverse rows well developed, all setigerous.

Gonopods of male conspicuously exposed. The telopodite bent forward in the excavation and then ventrocephalad between bases of legs of the preceding body segment. Basal segment of each gonopod swollen into a thick, rounded rampart ectad of excavation in which telopodite arises. Telopodite ending distally in a long, slightly sinuous or sigmoidal process which is acute distally, this terminal process with a minute tooth at base on subectal side and with a thin, rounded lamina on mesal side as shown in the accompanying figure.

Length, 12 mm.; width, 1.5 mm. (male holotype).

Utah: Henry Mountains, above King's ranch. Taken among rocks at level of the quaking aspens on slopes of Mount Ellen. Many specimens.

SPIROSTREPHON UTORUM Chamberlin

Utah: **St. George, Washington County**, one female taken April 3, 1929, by Lowell Woodbury.

Previously known from Emery, Wayne, and San Juan counties.

UNDERWOODIA TIDA Chamberlin

Utah: Butterfield Canyon, Oquirrh Mountains, Salt Lake County (May, 1929).

Many specimens, of which all but one are females. A similar disproportion of the sexes has been noted in other species of this genus. Described originally from Loga, Cache County.

TWO CORRECTIONS

On page 15 of this volume the name *Diceratothrips brevitubus* Moulton, n. sp., should read **Trybomia brevitubus** Moulton, n. sp.

On page 57 of this volume the Miscellaneous Studies in the Coleoptera, by Dr. Blaisdell, should have been Number Four instead of Number Three.